

# USACE Remediation System Evaluations (RSEs): Building on More Than a Decade of Experience

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# Overview

- ***Presentation reflects my personal observations and thoughts, not those of the Army or USACE***
- Key Aspects of Optimization Based on USACE Experience over Past 12 Years
- Planned Assessment for Army Cleanup Programs
- Optimization & Sustainability – A Natural Combination
  - ▶ USACE Sustainability Initiatives
  - ▶ Incorporating Sustainability into RSEs
- Future Issues



# Key Aspects: RSE Team Composition

- Senior Personnel
  - ▶ Multi-Disciplinary – Engineering, Hydrogeology
  - ▶ Experienced
  - ▶ Knowledgeable in Alternative Technologies
- Independent from Project Team





# Key Aspects: Technical Considerations

- Evaluate Site Conceptual Model, Site Goals, Closure/Exit Strategy
  - ▶ Must be Holistic Evaluation
- Technical Review of Operational Data
  - ▶ Look for Problems
  - ▶ Amazing What is In Details
- Verify Recommendation is Viable, Consistent with Site Conditions



# Key Aspects: Technical Considerations 2

- Suggest Approach to Implementation
- Provide Realistic, Inclusive Cost Estimates
- Follow-Up
  - ▶ Verify Project Team Understands RSE Recommendations
  - ▶ RSE Team to Facilitate Implementation of Recommendations



# Key Aspects: Human Considerations

- Positive, Forward-Looking Approach
  - ▶ Emphasize Change is Expected and Inevitable
- Seek and Value Project Team's Input from Start
- Communicate, Educate
- Consider Stakeholders
  - ▶ Invite to Observe, Participate
  - ▶ Emphasize RSE = Balance of Effectiveness and Cost



# Key Aspects: Contract Considerations

- Include Contract Provisions/Options for Implementing Optimization Changes
  - ▶ Budgeted Item
- Technically Qualified Contractors
  - ▶ Engineering & Scientific Capabilities On-Staff or through Partner





# Key Aspects: Contracting Considerations 2

- Fixed-Price, Performance-Based Contracts
  - ▶ Not Gov't Responsibility to Optimize Cost, but No Reason to Waste \$\$
  - ▶ Government Estimate that Accounts for Optimization
    - Optimization before PBCs
  - ▶ Government Must Assure Adequate Performance Since It Retains Liability
    - Typical Five-Year Contract Life
- Can Other Contract Approaches with Optimization Outperform PBC on Long-Term Remedial Project?



# Key Aspects: Institutional Issues

- Management Should:
  - ▶ Have a Clear Strategic Vision for Restoration Program – Time or Money Saved?
  - ▶ Have a Program of Periodic Independent Optimization /Performance Evaluations
  - ▶ Perform Oversight/Monitoring of Implementation of Optimization Recommendations



# Key Aspects: Institutional Issues 2

- Management Should Also:
  - ▶ Measure Team Performance, Reward Efficiency
  - ▶ Offer Team Incentives for Implementing Optimization Recommendations
  - ▶ Provide Funding for Conducting Optimization and Implementing Recommendations – Pay Now or Later



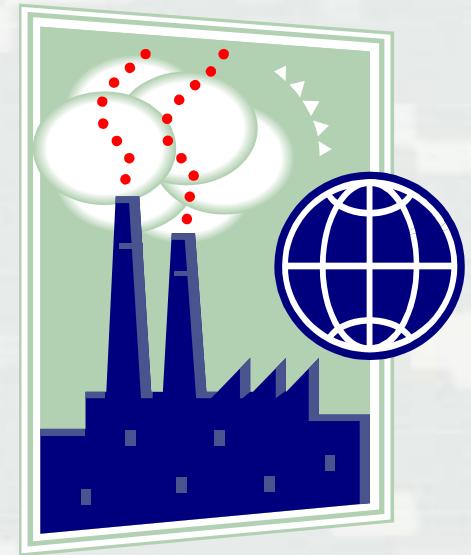
# Current USACE EM CX Activities

- USACE EM CX Performing Study of Optimization Potential for Army Program
  - ▶ Assess Program Opportunities and Priorities Based on Historical Observations
  - ▶ Recommendations for Programmatic Approaches



# Optimization and Sustainability

- ▶ Evaluate Carbon Emissions, Resource Use, Environmental Impact, Other Risks in Alternative Technologies
- ▶ Factor in Recommendations
  - Alternative Energy Sources, Energy Recovery
  - Recycling
  - Worker, Community Risk





# Optimization and Sustainability 2

- USACE / Army Sustainability Framework
  - ▶ Interim Guidance, March 2010
  - ▶ Incorporate Sustainability Considerations Through Entire Life-Cycle of Project
  - ▶ Incorporate Sustainability into Existing Processes, incl. RSEs
  - ▶ RSE Checklists to Include Sustainability Issues
- Recent Demonstrations of Sustainability Analysis as Part of Army Optimization Studies
- Upcoming Army-Sponsored Study of Sustainability Integration into all Remedial Phases, including Optimization



# Future Areas of Emphasis

- Exit Strategies
  - ▶ Encourage Their Development
- Data Management for the Long Haul
  - ▶ Preserve Data Integrity over Decades
- Remediation Risk Management
  - ▶ Weigh Risks of Engineering Failure in Assessing Optimization Alternatives



# Summary

- Lessons Learned over 10+ Years of RSEs
  - ▶ Independent Expert Team
  - ▶ Holistic, Constructive, Realistic, Recurring, Inclusive, and Positive Approach
  - ▶ Consider Contracting Approach, Incentives
  - ▶ Top-Down Driven: Oversight, Follow-up
    - USACE Providing Input to Army
- Sustainability to be Integrated with RSEs
- Future Emphasis on Exit Strategies, Data Integrity, Remedy Risk Management

